

INTRODUCTION

Lymph node (LN) upstaging occurs in approximately 10–30% of patients with clinical stage I NSCLC¹ and has important implications for prognosis and treatment decisions. In EGFR^{mut} NSCLC, the emergence of effective adjuvant² and neoadjuvant³ targeted therapies makes accurate assessment of occult nodal disease increasingly relevant, yet the risk remains poorly defined.

We aimed to determine the rate and predictors of LN upstaging in patients with resectable EGFR^{mut} NSCLC undergoing upfront surgery, to identify those at higher risk of occult nodal disease.

METHODS

Population:

Patients with early-stage EGFR^{mut} NSCLC who underwent upfront surgical resection at a high-volume center between January 2014 and December 2023.

Data collected:

- Demographics
- Preoperative imaging, mediastinal staging
- Tumor characteristics, final pathology

Statistical analysis:

- Multivariable logistic regression to identify predictors of LN upstaging
- Development and external validation of a multivariable prediction model
- Significance threshold: $p < 0.05$
- Kaplan–Meier estimates of RFS and OS, stratified by LN upstaging

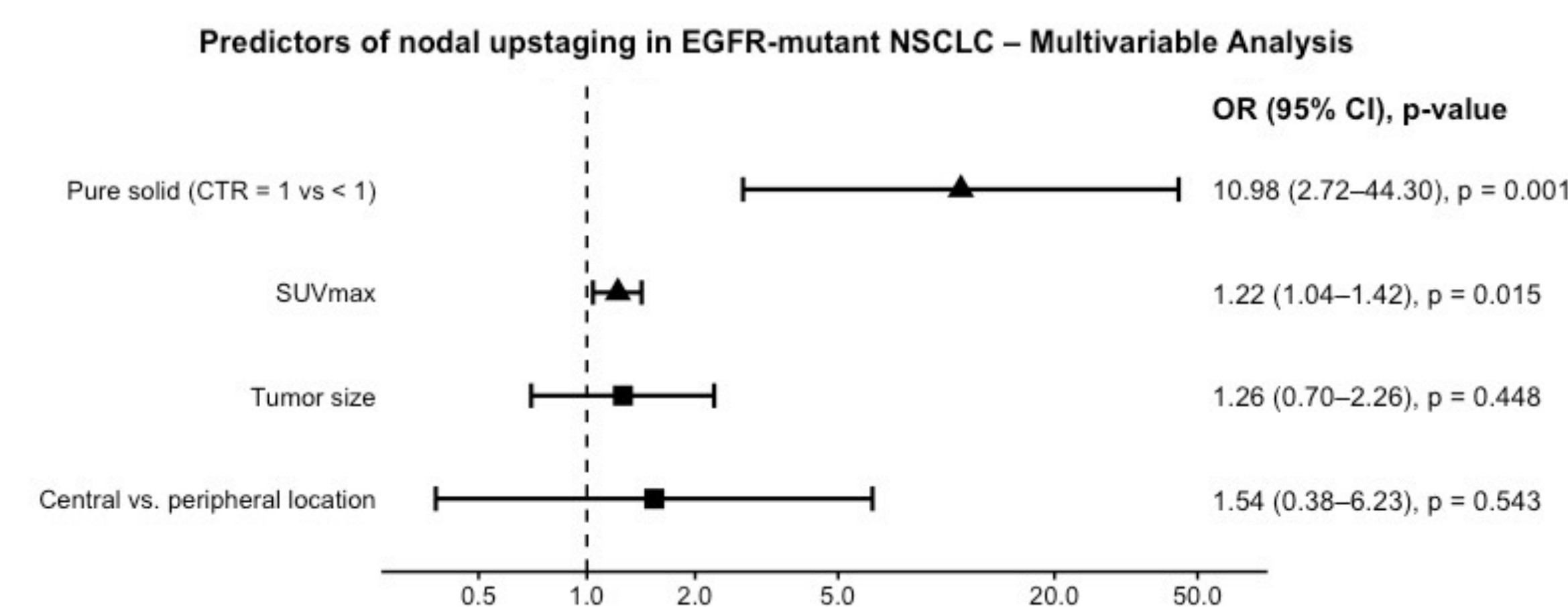
RESULTS

Data of 107 EGFR^{mut} NSCLC patients were retrieved.

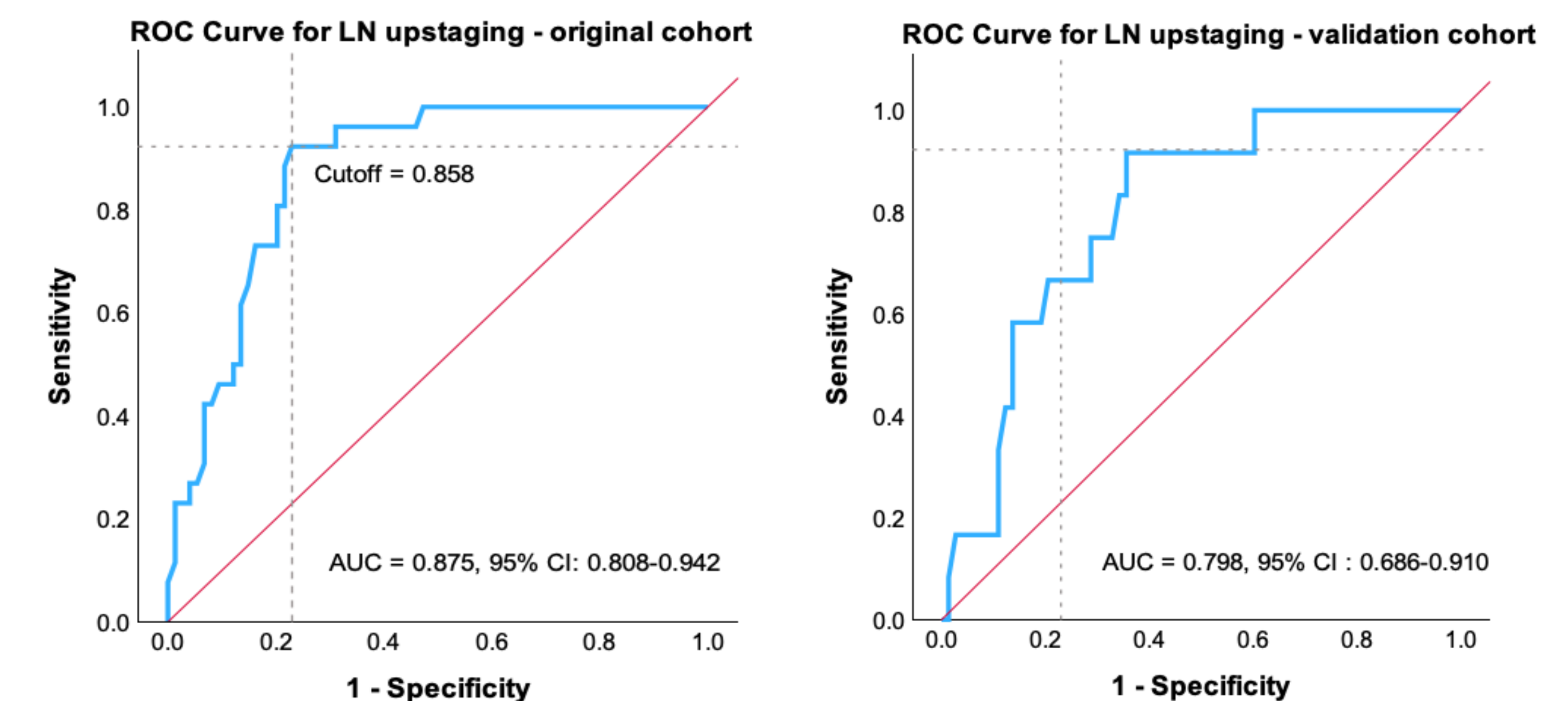
EGFR^{mut} NSCLC underwent upfront surgery (n=107)

variable, n (%)		LN upstaged (n=27, 25.2%)	Non-upstaged (n=80, 74.8%)
Sex	male	9 (33.3%)	24 (30%)
	female	18 (66.7%)	56 (70%)
tumor density	CTR =1	24 (88.9%)	25 (31.2%)
	CTR > 0.5 and <1	3 (11.1%)	45 (56.3%)
	CTR ≤ 0.5	0 (0%)	10 (12.5%)
EGFR mutation subtype	Exon 19 deletion	11 (40.7%)	19 (23.7%)
	Exon 21 L858R	9 (33.3%)	27 (33.8%)
	other mutations	7 (26.0%)	34 (42.5%)
variable, mean ± SD		age	65.9 ± 9.7
variable, median (IQR)		SUVmax	6.7 (4.6-12.1)
		tumor size in cm	2.5 (2.1-3.5)
			2.2 (1.6-2.7)

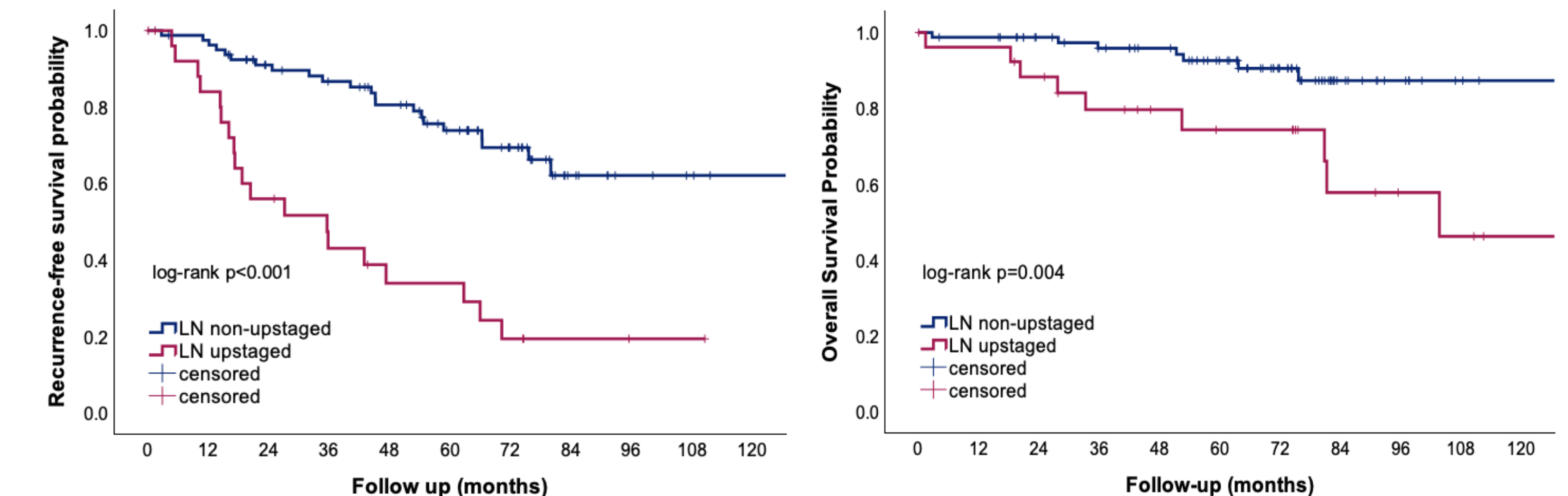
SUVmax and pure solid CT appearance (CTR=1) were identified as independent predictors of nodal upstaging in EGFR^{mut} NSCLC patients.



The multivariable logistic regression model incorporating these two factors demonstrated high sensitivity (92.3%) and negative predictive value (96.6%), with a specificity of 77% and positive predictive value of 58.5%.



Nodal upstaging was associated with significantly worse RFS and OS, with 5-year RFS of 33.9% vs. 73.9% and 5-year OS of 74.4% vs. 92.6%.



DISCUSSION AND CONCLUSION

- **Pathological nodal upstaging occurred in 25.2%** of resectable early-stage EGFR^{mut} NSCLC, highlighting the frequency of occult nodal disease.
- **Higher primary tumor SUVmax and purely solid CT appearance (CTR=1)** independently predicted nodal upstaging and may reflect more aggressive tumor biology.
- Incorporating these features into a **preoperative prediction model may improve risk stratification** and help **guide invasive mediastinal staging** and treatment planning.
- Better identification of high-risk patients may facilitate timely treatment decisions, particularly as neoadjuvant strategies evolve in EGFR^{mut} NSCLC.

REFERENCES & ACKNOWLEDGEMENTS

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